

REMARKS

The office action of March 23, 2005 has been reviewed and its contents carefully noted. Reconsideration of this case, as amended, is requested. Claims 1 through 4 remain in this case.

The numbered paragraphs below correspond to the numbered paragraphs in the Office Action

2. The Application currently names joint inventors. The subject matter of the various claims was commonly owned at the time any inventions covered therein were made.

Rejection under 35 U.S.C. §103

3. Claims 1-4 were rejected under 35 U.S.C. 103(a) as being unpatentable over Bergkvist et al. (US 2003/0033903). Applicant respectfully disagrees with the rejection.

Bergkvist et al uses an annealed stainless steel powder that has at most 0.5% by weight of silicon, see col. 1, paragraph [0011] and [0012]. In preferred embodiments, the silicon is in a range of 0.1-0.3 weight percent paragraph [0013]. In Example 1 of Bergkvist et al. the silicon weight percent for material A and B are 0.9 and 0.13 respectively [0025]. The powder is then compacted and sintered between 1120°-1250°C for 30-120 minutes.

Applicant's metallurgic powder is comprised of 0.5-5.0 weight percent silicon. The metallurgic powder is compressed and then heated "...in an atmosphere to a temperature of 2100°F to 2400°F for 20 to 90 minutes, such that microstructure of the compact has a duplex phase or a single phase, the duplex phase having both ferritic and austenitic phases and the single phase having only a ferritic phase." (Emphasis added)

Applicant's weight percent of silicon starts at 0.5 weight percent silicon, specifically where Bergkvist et al. places a limit on the most amount of silicon the powder may contain. Furthermore, Applicant's range of silicon is significantly greater than Bergkvist et al. With the increased amount of silicon in the powder, the heating of the compact to a temperature of 2100°F to 2400°F for 20 to 90 minutes, results in the compact having a microstructure with a duplex phase or a single phase, the duplex phase having both ferritic and austenitic phases and the single

phase having only a ferritic phase. Bergkvist et al. does not teach and will not result in the microstructure of the compact having a duplex phase or a single phase, the duplex phase having both ferritic and austenitic phases and the single phase having only a ferritic phase since the starting materials are significantly different.

The Examiner states that "Bergkvist et al. is silent as to the green compact density, but teaches that this parameter can be modified by adjusting the compaction pressure in order to obtain a desired green body strength." Bergkvist is specific in its teaching of using high velocity compaction (HVC), and states that normally used compaction equipment is inadequate in obtaining the products having the high density required. The term "high velocity compaction (HVC)" is defined by Bergkvist as a "type of compaction wherein the density of the compacted product is controlled by the impact energy transferred to the powder" (see paragraph [0015]) and Bergkvist quantifies this energy by indicating the ram speed should be above 2 m/s (see paragraph [0016]). Bergkvist also states that, "no straight equivalence exists between compaction pressure in a conventional press and the ram speed (see paragraph [0016]). This teaches away from the present application, which uses conventional compaction pressure, not high velocity compaction (HVC), and thus the Examiner's statement that the parameter of green compact density is taught and the parameter is modified by adjusting the compaction pressure in Bergkvist is incorrect.

In summary, Bergkvist teaches that in order to obtain high density end products, high velocity compaction (HVC) is necessary. Applicant does not require high velocity compaction (HVC) in order to compressing the metallurgic powder at a pressure of 35 to 65 tsi to provide a green compact (emphasis added). Furthermore, Applicant's metallurgic powder is different and includes a substantial amount of silicon in comparison to Bergkvist. After heating Applicant's powder, the compact has a duplex phase or a single phase, with the duplex phase having both ferritic and austenitic phases and the single phase having only a ferritic phase which is not taught by Berkvist.

Therefore, it is respectfully suggested that the rejection of independent claim 1 as being obvious over Bergkvist et al. (US 2003/0033903) is overcome.

Regarding claim 3, Bergkvist states, "The method according to the invention permits manufacture of green and sintered compacts having high density such as densities above 96 or even about 98% of the theoretical density...corresponds to densities above 7.25, 7.3 and even 7.35g/cm³." (see paragraph [0022]) Bergkvist's compacts have the high density due to the specific use of high velocity compaction (HVC). Applicant's dependent claim 3 states "wherein the step of compressing the metallurgic powder produces a compact with a density of 6.0g/cc to 7.0 g/cc." From the density of the compact, the theoretical density of Applicant's compact is 75 to 95%. The Applicant, as stated above does not use high velocity compaction (HVC).

Dependent claims 2-4, being dependent upon and further limiting independent claim 1, should also be allowable for that reason, as well as for the additional recitations they contain. Reconsideration and withdrawal of the rejection are respectfully requested.

Provisional Double Patenting

5. Claims 1-4 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim s 1-33 of copending Application No. 10/697,344 and claims 1-21 of copending Application No. 10/766,154.

Application No. 10/697,344 has been abandoned in favor of 10/983,554, a continuation-in-part.

Applicant will take appropriate action to respond to the provisional double patenting rejection at a later time.

Conclusion

Applicant believes the claims, as amended, are patentable over the prior art, and that this case is now in condition for allowance of all claims therein. Such action is thus respectfully requested. If the Examiner disagrees, or believes for any other reason that direct contact with Applicants' attorney would advance the prosecution of the case to finality, he is invited to telephone the undersigned at the number given below.

"Recognizing that Internet communications are not secured, I hereby authorize the PTO to communicate with me concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file."

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